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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,431	02/26/2004	Shi-Wai S. Cheng	GP-300576	4757

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CARY W. BROOKS  
General Motors Corporation  
Legal Staff, Mail Code 482-C23-B21  
P.O. Box 300  
Detroit, MI 48265-3000

EXAMINER
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WARTALOWICZ, PAUL A

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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10/04/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/787,431

Applicant(s)

CHENG, SHI-WAI S.

Examiner

Paul A. Wartalowicz

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1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 22-34 is/are pending in the application.
- 4a) Of the above claim(s) 1-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 22, 23, 26, 29-31, and 34 rejected under 35 U.S.C. 102(b) as being anticipated by Ernest et al. (U.S. 4426320).

Ernest et al. teach an exhaust gas treatment system (col. 1) comprising passing exhaust through to coarse foam filter which can be catalyzed (instant ceramic foam filter, col. 2, 3) and then through a fine filter (instant wall flow filter, col. 1, 2).

It appears the teaching in Ernest et al. meet the limitation of the fine wall filter surrounding a portion of the catalyzed foam filter in that the coarse foam filter is upstream and the fine filter is downstream such that the fine filter surrounds the rear portion of the catalyzed foam filter.

It appears that Ernest et al. teach the limitations of claim 23 as the exhaust stream is passed to a foam filter, such that the gas has to be passed through a canal (conduit) having an inner surface and a cavity.

It appears that the teaching in Ernest et al. meet the limitation wherein the porous wall is spaced a distance from the rear face of the catalyzed foam filter in that the fine filter is located downstream from the catalyzed foam filter.

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Claims 22, 23, 26, 29-31, and 34 rejected under 35 U.S.C. 102(b) as being anticipated by Rummler et al. (U.S. 5853579).

Rummler et al. teach a filter system (col. 1) comprising passing exhaust through to coarse foam filter which can be catalyzed (instant ceramic foam filter, col. 31, fig. 24A) and then through a fine filter (instant wall flow filter, col. 31, fig. 24A).

It appears the teaching in Rummler et al. meet the limitation of the fine wall filter surrounding a portion of a catalyzed foam filter in that the coarse foam filter is upstream and the fine filter is downstream such that the fine filter surrounds the rear portion of the catalyzed foam filter.

It appears that Rummler et al. teach the limitations of claim 23 as the exhaust stream is passed to a foam filter, such that the gas has to be passed through a canal (conduit) having an inner surface and a cavity.

It appears that the teaching in Rummler et al. meet the limitation wherein the porous wall is spaced a distance from the rear face of the catalyzed foam filter in that the fine filter is located downstream from the catalyzed foam filter.

Claims 22-26, 28, 30-34 rejected under 35 U.S.C. 102(b) as being anticipated by Galloway (U.S. 5582800).

Galloway, however, teaches a filter apparatus (col. 1) wherein a fine filter surrounds both sides of coarse filter and the rear of the coarse filter (fig. 1, # 14; fig. 2, # 14,16,18,19). Galloway also teaches a separator that has an opening and wherein the

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combination is supported by the separator (fig. 1, #13; fig. 2, # 16; fig 3, # 43) and a cavity within a conduit (fig. 3, # 43).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ernest et al. (U.S. 4426320).

Ernest et al. teach an exhaust gas treatment system as described above in claim

1.

Ernest fails to teach wherein the wall flow filter is a single cell wall flow filter.

Ernest et al., however, teach that the cell sizes of each filter are selected to optimize particulate trapping so that pressure drop is minimized while good trapping efficiency is maintained.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the cell size of the filter, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2<sup>nd</sup> 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to optimize the cell size of the filter by the reasoned explanation that the thickness of the wall filter can be reduced to an optimum size so as to minimize the pressure drop while maintaining good trapping efficiency as taught by Ernest et al.

Claims 24, 25, 28, 32, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Ernest et al. (U.S. 4426320) or Rummler et al. (U.S. 5853579) in view of Galloway (U.S. 5582800).

Ernest et al. and Rummler et al. teach an exhaust gas treatment system as described above in claim 1.

Ernest et al. and Rummler et al. fail to teach a separator having an opening therethrough wherein the combination is supported by the separator so that the opening exposes the front face of the catalyzed filter, and that the wall flow filter surrounds a portion of the side edge.

Galloway, however, teaches a filter apparatus (col. 1) wherein a fine filter surrounds both sides of coarse filter and the rear of the coarse filter (fig. 1, # 14; fig. 2, # 14,16,18,19). Galloway also teaches a separator that has an opening and wherein the combination is supported by the separator (fig. 1, #13; fig. 2, # 16; fig 3, # 43).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a fine filter surrounding both sides of coarse filter and the rear of the coarse filter (fig. 1, # 14; fig. 2, # 14,16,18,19) and a separator that has an opening and wherein the combination is supported by the separator (fig. 1, #13; fig. 2, # 16; fig 3, # 43) in Ernest et al. or Rummler et al. because such a structure is known in the art and that such a filter apparatus allows for maximum surface contact with the exhaust gas as taught by Galloway.

**Conclusion**

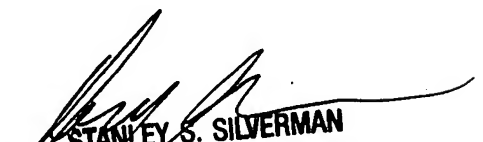
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Paul Wartalowicz  
September 30, 2007



STANLEY S. SILVERMAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1754